Space Weather Forecast

Issued on Sunday 9 March 2025 at 12:38 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Isolated Moderate class flares. G1/Minor Storm intervals expected day 1 (09 Mar) and also later day 4 (12 Mar).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Low with only common class flares observed, with the strongest from just over the east limb. There are six regions on the visible disc, with the most notable in the southwest quadrant. While this region has been relatively inactive, it does still have potential for isolated flaring due to its slightly complex magnetic field. The other regions remain small and simple. There is also the potential for a new region to rotate onto the disc from over the east limb over the next few days.

No Earth-directed coronal mass ejections (CMEs) have been observed.

Solar Wind / Geomagnetic Activity: An erratic connection to the faster winds from a coronal hole was observed. Solar winds erratically rose from slightly elevated levels at around 400km/s to current strong levels around 650km/s, with a peak of around 700km/s at 09/0950UTC. Total Interplanetary Magnetic Field, Bt, was largely Moderate to Strong, ranging 10-19nT, peaking around 08/1610 UTC, but fell to weak levels from 08/0900UTC to end the period around 6nT. The north-south component, Bz, was weak and variable at first, but favoured a predominately Moderate negative (southward) from 08/1520 UTC to around 09/0720UTC. Geomagnetic activity was Quiet to Unsettled (Kp 2-3) until 08/1800 UTC, then increased to Active to G1 minor storm levels (Kp4-Kp5) from 08/1800 UTC, with a single period of G2 Moderate storm 09/0300-0600UTC.

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) was at Background with no Solar Radiation Storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity is forecast, with a chance of Isolated Moderate class flares.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs. Ongoing erratic connection to the faster solar winds is expected at first, before easing from later day 1 (09 Mar) onward. The next fast wind enhancement from is expected either late on day 4 (12 Mar) or just beyond this period. Active to G1 Minor storms are forecast at first, with a slight chance of G2

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Moderate Storms. This activity will ease to become Quite to Unsettled with Active intervals day 2-3 (10-11 Mar), with a risk of further G1-G2 Minor to Moderate storms later on day 4.

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) is forecast to be at Background with no Solar Radiation Storms occurring.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	Yes	70	20	5	20
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	No	40	40	50	50
Very Active	R3-R5 (X Class)	No	5	5	5	5

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	2	5	5
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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